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Fire Protection, Session T10

Advances in Fire Modeling and Fire PRA

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Fire Risk Research Exemplifies RES Mission

- RES mission
  - Provide technical advice, technical tools, and information for identifying and resolving safety issues, making regulatory decisions, and promulgating regulations and guidance.
- Agency PRA policy statement
  - PRA technology should be increased in all regulatory matters to the extent supported by state-of-art in PRA methods and data in a manner that complements the NRC's deterministic approach and supports NRC's traditional defense-in-depth philosophy.
- Fire risk research
  - Fire risk can be important (from IPEEEs)
  - Acquire better understanding of how important

Fire PRA Activities

- Circuit Analysis
  - Participated in testing with nuclear industry
  - Developed better data and understanding
- Detection and Suppression
  - Utilized updated data base
  - Developed probability distributions which distinguish between fire area and suppression means
- Planned improvements across field
  - HRA analysis will rely more closely on plant conditions
  - Further clarify early fire effects

Fire Modeling Activities

- Fire modeling supports fire PRA and other performance based activities
- Identifying limitations/applicability of fire model classes
  - Empirical correlations
  - Zone
  - Computational fluid dynamics
- Understanding uncertainty
  - Parameter (e.g. heat release rate)
  - Modeling
- Validation and model improvement (long term)

RES Support of Fire Protection Regulatory Activities

- Associated circuits inspection
- Fire protection SDP
- Risk informed, performance based rulemaking (NFPA 805)
- Manual actions rulemaking
- ANS fire risk standard (full power)